T11 – S1

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

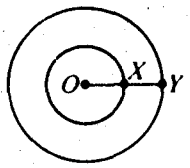
	Column A	Column B
	$n > 1$	
1.	$\frac{n}{n+1} + 1$	$1 - \frac{1}{n+1}$

Maria purchased 3 pounds of candy X for \$7.98 and 5 pounds of candy Y for \$10.95.

2.	The price Maria paid per pound for candy X	The price Maria paid per pound for candy Y

x is an integer greater than 1.

3.	$2x + 5$	$5x + 2$
4.	$3(2^5)$	$5(3^2)$



O is the center of the two circles and $OX = XY = 1$.

5.	Half the circumference of the larger circle	The circumference of the smaller circle

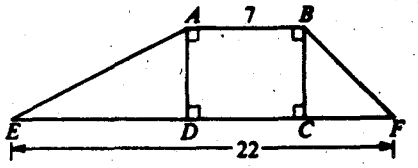
$$rq = 0$$
$$rq = 1$$

6.	r	0
7	0.9×0.9	$0.9 \times 0.9 \times 0.9$

A student can purchase a research report for \$5.00, or reproduce the x pages of the report at a cost of \$0.15 per page.

8.	The greatest possible value of x if the cost of reproducing the x pages is less than the cost of purchasing the report	34

	Column A	Column B



9.	The area of rectangular region $ABCD$	The area of triangular region ADE

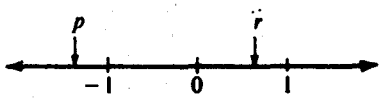
$$x < y < 0$$

10.	$x + y$	xy

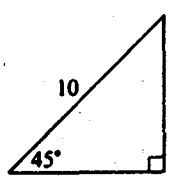
In $\triangle ABC$, $AB = BC$.

11.	The measure of $\angle B$	60°

Questions 12-13 refer to the following number line.



12.	$-p$	r
13.	$p + r$	$r - p$



14.	The area of the triangular region	25

The length of a rectangular garden is increased by p percent and its width is decreased by p percent.

15.	The area of the new garden if $p = 10$	The area of the new garden if $p = 20$

GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. Which of the following is NOT a divisor of 264 ?

(A) 4
(B) 8
(C) 9
(D) 11
(E) 12

17. If $3(x + 1) = 4x - 1$, then $x =$

(A) $\frac{4}{7}$

(B) $\frac{3}{4}$

(C) 2

(D) 3

(E) 4

18. If 55 percent of the people who purchase a certain product are female, what is the ratio of the number of females who purchase the product to the number of males who purchase the product?

(A) $\frac{11}{9}$

(B) $\frac{10}{9}$

(C) $\frac{9}{10}$

(D) $\frac{9}{11}$

(E) $\frac{5}{9}$

19. C is a circle, L is a line, and P is a point on line L. If C, L, and P are in the same plane and P is inside C, how many points do C and L have in common?

(A) 0
(B) 1
(C) 2
(D) 3
(E) 4

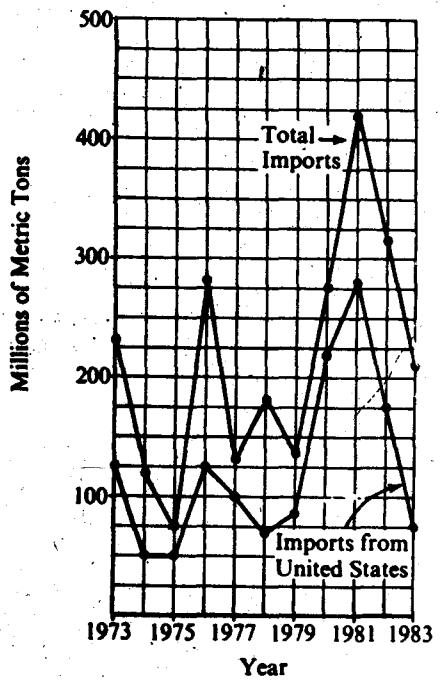
20. If one number exceeds another number by 13 and the larger number is $\frac{3}{2}$ times the smaller number, then the smaller number is

(A) 13
(B) 26
(C) 31
(D) 39
(E) 65

GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graph.

COUNTRY *X*'S TOTAL WHEAT IMPORTS COMPARED TO ITS WHEAT IMPORTS FROM THE UNITED STATES, 1973-1983



Note: Drawn to scale.

21. From 1973 to 1977, inclusive, how many million metric tons of wheat did Country *X* import from the United States?

(A) 450
(B) 400
(C) 350
(D) 320
(E) 250

22. For how many of the years shown did Country *X* import more than 200 million metric tons of wheat?

(A) Two
(B) Five
(C) Six
(D) Seven
(E) Eight

23. The amount of wheat Country *X* imported from countries other than the United States was greatest in which of the following years?

(A) 1974
(B) 1976
(C) 1978
(D) 1981
(E) 1983

24. For the year in which total wheat imports and wheat imports from the United States were most nearly equal, how many million metric tons of wheat did Country *X* import?

(A) 150
(B) 125
(C) 90
(D) 75
(E) 50

25. For the year in which the amount of Country *X*'s total wheat imports was greatest, approximately what percent of that total was imported from the United States?

(A) 35%
(B) 40%
(C) 50%
(D) 65%
(E) 75%

GO ON TO THE NEXT PAGE.

26. $\left(2+\frac{3}{4}\right)^2-\left(2-\frac{1}{4}\right)^2=$

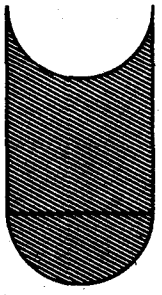
(A) $\frac{37}{8}$

(B) $\frac{9}{2}$

(C) 3

(D) 1

(E) $\frac{1}{2}$



27. If each curved side in the figure above is a semicircle with radius 20, and the two parallel sides each have length 100, what is the area of the shaded region?

(A) 2,000
(B) 4,000
(C) $2{,}000-200\pi$
(D) $4{,}000-200\pi$
(E) $4{,}000-400\pi$

28. If the degree measures of the angles of a triangle are in the ratio 3 : 4 : 5, what is the degree measure of the smallest angle?

(A) 15°
(B) 30°
(C) 45°
(D) 60°
(E) 75°

29. A board of length L feet is cut into two pieces such that the length of one piece is 1 foot more than twice the length of the other piece. Which of the following is the length, in feet, of the longer piece?

(A) $\frac{L+2}{2}$

(B) $\frac{2L+1}{2}$

(C) $\frac{L-1}{3}$

(D) $\frac{2L+3}{3}$

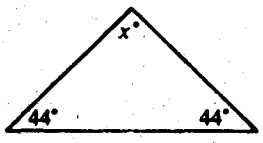
(E) $\frac{2L+1}{3}$

30. How many positive integers are both multiples of 4 and divisors of 64?

(A) Two
(B) Three
(C) Four
(D) Five
(E) Six

T11 - S5

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
1.	The number of seconds in an hour	The number of days in 10 years
2.	The average (arithmetic mean) of 13, 31, and 81	The average (arithmetic mean) of 13, 30, and 81
	$x = 4$	
3.	$3x^2$	144
4.	 x	88
5.	$(598.95)^2$	360,000
6.	$3.4(5.5)$	$3(5.5) + 0.4(5.5)$
7.	The cost of x apples at a cost of $y + 2$ cents apiece	The cost of y oranges at a cost of $x + 2$ cents apiece
8.	$\sqrt{5^2}$	$5\sqrt{5}$

	Column A	Column B
	A rectangular box is 2 feet wide and 3 feet long and has a volume of 15 cubic feet.	
9.	The height of the box	3 feet
10.	24 percent of 75	75 percent of 24
	The height of right circular cylinder C is 3 times the diameter of its base.	
11.	The circumference of the base of C	The height of C
12.	The area of a square region with perimeter 24	The area of a rectangular region with perimeter 28
	$2x + 3y = 10$ $x + 2y = 8$	
13.	$x + y$	2
	In the rectangular coordinate plane, points P, Q, and R have coordinates (2, 3), (5, 6), and (5, 3), respectively.	
14.	PQ	QR
	x is an integer greater than 1.	
15.	3^{x+1}	4^x

GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. If $n + n = k + k + k$ and $n + k = 5$, then $n =$

(A) 2
(B) 3
(C) 5
(D) 6
(E) 9

17. What is the length of a rectangle that has width 10 and perimeter 60 ?

(A) 15
(B) 20
(C) 25
(D) 30
(E) 40

18. A watch gains 7 minutes and 6 seconds every 6 days. If the rate of gain is constant, how much does the watch gain in one day?

(A) 1 min 1 sec
(B) 1 min 6 sec
(C) 1 min 11 sec
(D) 1 min 16 sec
(E) 1 min 21 sec

19. If $2x = 7$ and $3y = 2$, then $9xy =$

(A) 14
(B) 18
(C) 21
(D) 28
(E) 63

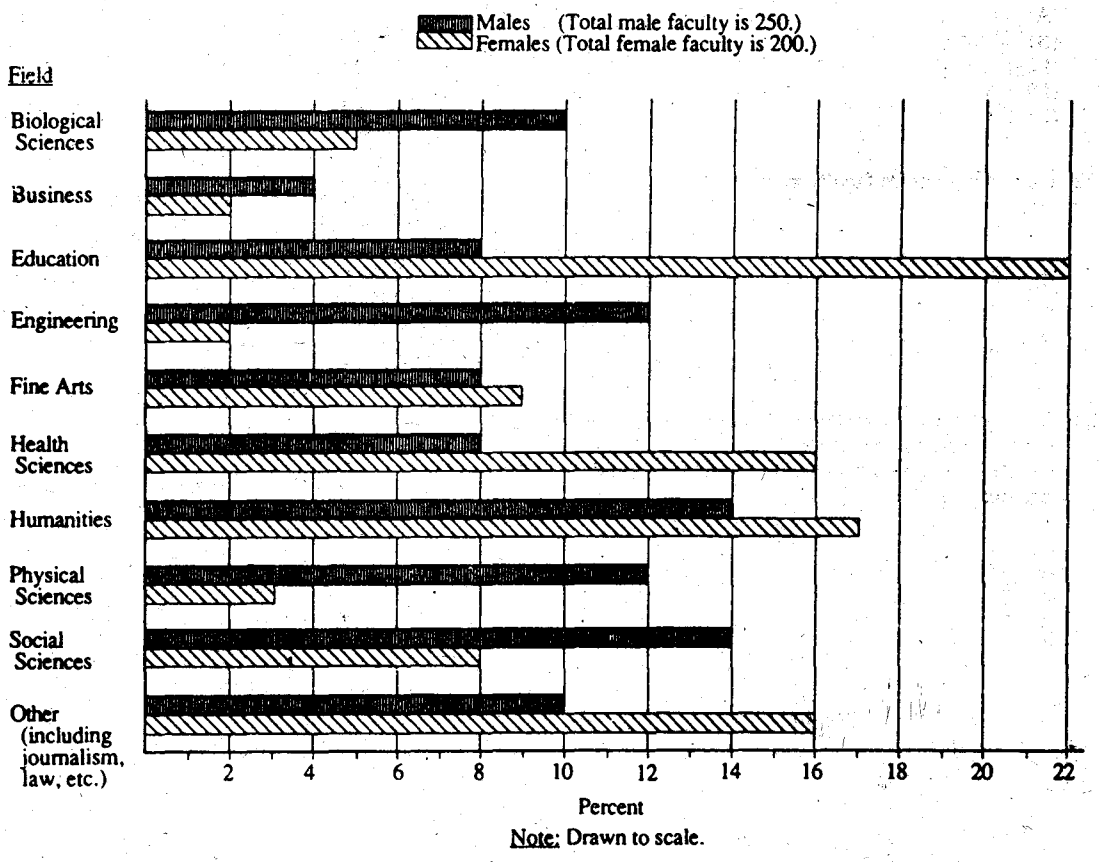
20. If $\sqrt{x} = 16$, then $x =$

(A) 4
(B) 8
(C) 16
(D) 32
(E) 256

GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graph.

PERCENT OF TOTAL MALE FACULTY AND PERCENT OF TOTAL FEMALE FACULTY AT UNIVERSITY *X* BY FIELD



Note: Drawn to scale.

GO ON TO THE NEXT PAGE.

21. For how many of the fields is the percent of total male faculty at University X greater than 11 percent?

(A) Two
(B) Three
(C) Four
(D) Five
(E) Six

22. How many female faculty members are there in fine arts?

(A) 14
(B) 16
(C) 17
(D) 18
(E) 20

23. If the number of female faculty members in social sciences were to increase by 75 percent, how many female faculty members would there be in social sciences?

(A) 12
(B) 14
(C) 21
(D) 28
(E) 30

24. If there are 275 students in engineering at University X, what is the approximate ratio of the number of engineering students to the number of engineering faculty?

(A) 8 to 1
(B) 12 to 1
(C) 14 to 1
(D) 18 to 1
(E) 20 to 1

25. Approximately what percent of the humanities faculty is male?

(A) 35%
(B) 38%
(C) 41%
(D) 45%
(E) 51%

GO ON TO THE NEXT PAGE

26. If $2r - s = 3s - 2r$, what is s in terms of r?

(A) $\frac{r}{3}$

(B) $\frac{r}{2}$

(C) r

(D) $2r$

(E) $3r$

27. If $n \neq 0$, which of the following must be greater than n?

I. $2n$
II. n^3
III. $4 - n$

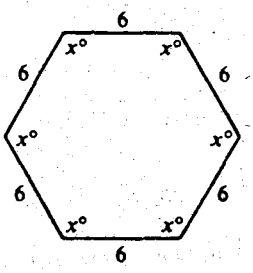
(A) None
(B) I only
(C) II only
(D) I and II
(E) I and III

28. The distance from point X to point Y is 20 miles, and the distance from point X to point Z is 12 miles. If d is the distance, in miles, between points Y and Z, then the range of possible values for d is indicated by

(A) $8 \leqq d \leqq 20$
(B) $8 \leqq d \leqq 32$
(C) $12 \leqq d \leqq 20$
(D) $12 \leqq d \leqq 32$
(E) $20 \leqq d \leqq 32$

29. What is the least integer value of n such that $\frac{1}{2^n} < 0.01$?

(A) 7
(B) 11
(C) 50
(D) 51
(E) There is no such least value.



30. What is the area of the hexagonal region shown in the figure above?

(A) $54\sqrt{3}$
(B) 108
(C) $108\sqrt{3}$
(D) 216
(E) It cannot be determined from the information given.

FOR GENERAL TEST 11 ONLY

Answer Key and Percentages* of Examinees Answering Each Question Correctly

VERBAL ABILITY

Section 3			Section 6		
Number	Answer	P+	Number	Answer	P+
1	A	96	1	A	89
2	C	74	2	D	75
3	C	71	3	C	59
4	C	55	4	E	50
5	D	59	5	C	57
6	E	43	6	E	39
7	A	28	7	E	24
8	B	94	8	B	81
9	D	83	9	A	86
10	C	75	10	C	84
11	D	63	11	D	57
12	E	49	12	C	51
13	E	39	13	C	43
14	E	37	14	D	30
15	E	32	15	A	32
16	C	27	16	E	14
17	A	75	17	B	84
18	D	71	18	B	74
19	D	80	19	C	52
20	B	68	20	A	57
21	B	[illegible]	21	E	83
22	D	69	22	C	53
23	A	47	23	B	54
24	E	38	24	D	65
25	B	41	25	C	83
26	C	31	26	A	45
27	B	41	27	B	33
28	D	89	28	A	96
29	B	82	29	B	61
30	B	72	30	A	83
31	A	74	31	C	76
32	A	57	32	D	64
33	D	42	33	D	39
34	C	36	34	E	41
35	E	31	35	B	31
36	D	29	36	A	26
37	A	29	37	A	28
38	E	17	38	B	21

QUANTITATIVE ABILITY

Section 1			Section 5		
Number	Answer	P+	Number	Answer	P+
1	A	90	1	B	88
2	A	83	2	A	85
3	B	88	3	B	85
4	A	83	4	A	81
5	C	84	5	B	80
6	C	68	6	C	77
7	A	83	7	D	77
8	B	71	8	B	77
9	D	70	9	B	67
10	B	76	10	C	64
11	D	52	11	A	48
12	A	64	12	D	41
13	B	74	13	C	46
14	C	33	14	A	60
15	A	32	15	D	20
16	C	86	16	B	77
17	E	76	17	B	84
18	A	78	18	C	72
19	C	63	19	C	74
20	B	62	20	E	80
21	A	76	21	C	90
22	C	68	22	D	83
23	B	59	23	D	65
24	D	64	24	A	68
25	D	64	25	E	44
26	B	53	26	C	64
27	B	45	27	A	54
28	C	37	28	B	47
29	E	20	29	A	37
30	D	19	30	A	21

ANALYTICAL ABILITY

Section 2			Section 4		
Number	Answer	P+	Number	Answer	P+
1	C	75	1	B	56
2	D	54	2	B	78
3	D	59	3	C	78
4	A	82	4	E	86
5	C	71	5	E	41
6	B	76	6	A	79
7	D	73	7	C	78
8	C	80	8	A	68
9	E	54	9	B	76
10	A	72	10	A	57
11	E	86	11	D	66
12	D	10	12	D	47
13	C	62	13	D	42
14	E	60	14	A	37
15	E	28	15	E	67
16	A	51	16	B	89
17	B	42	17	B	29
18	A	27	18	E	51
19	D	33	19	C	73
20	C	62	20	E	32
21	E	22	21	D	25
22	E	21	22	E	10
23	B	56	23	D	69
24	B	61	24	C	75
25	B	46	25	A	66

*Estimated P+ for the group of examinees who took the GRE General Test in a recent three-year period.

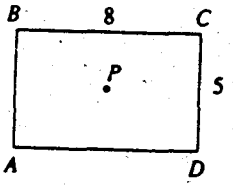
T12-S1

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
1.	$\frac{1}{15} + \frac{2}{15}$	$\frac{1}{17} + \frac{2}{17}$

A machine packages milk at the rate of q quarts per hour.

2.	The number of hours required for the machine to package 5,000 quarts of milk	8



P is the intersection of the two diagonals of rectangle $ABCD$.

3.	The shortest distance from P to side AB	The length of side AB

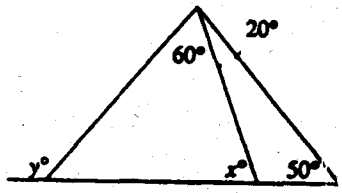
$x < 0 < y$

4.	$x - y$	x

The average (arithmetic mean) of the 4 numbers p, q, r, and s is 7.

5.	$\frac{p + q + r + s}{7}$	4
6.	23.752 × 10,000	23,752

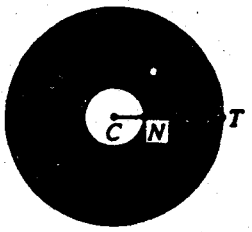
	Column A	Column B



7.	$x + y$	180

$x > z$
$y > z$

8.	$x + y$	z



On the circular target, C is the center of both circles. $CN = 8$ inches and $CT = 30$ inches.

9.	The area of the shaded part of the target	484π sq in

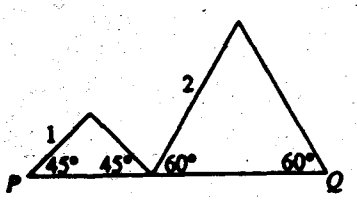
$x = -10$
$\frac{x}{y} = \frac{5}{7}$

10.	x	y

GO ON TO THE NEXT PAGE.

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

Column A	Column B

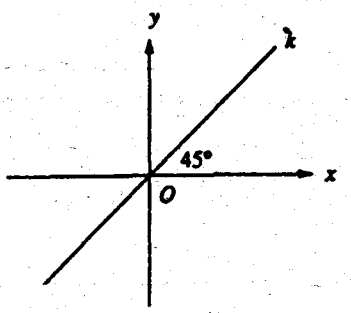


11. The length of PQ $3\sqrt{2}$

In 1982 the price of one share of Company X stock increased 25 percent from January 1 to February 1 and decreased 20 percent from February 1 to March 1.

	Column A	Column B
12.	The price of one share of Company X stock on January 1, 1982	The price of one share of Company X stock on March 1, 1982

Column A	Column B

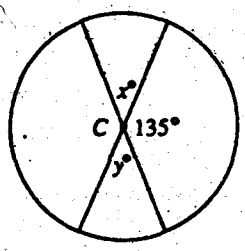


The point (not shown) with rectangular coordinates (m, n) is above line k.

	Column A	Column B
13.	m	n
14.	$2(\sqrt{50} + 5)$	$5(2 + 2\sqrt{2})$
15.	$\frac{x}{10^4}$	$\frac{x}{10^5}$

GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.



16. If C is the center of the circle above, then $x + y =$

(A) 45
(B) 65
(C) 90
(D) 100
(E) 130

17. If $0.768 = \frac{x}{100}$, then x is closest to which of the following?

(A) 0.77
(B) 0.80
(C) 8
(D) 76
(E) 77

18. If the remainder is 1 when the integer n is divided by 15, what is the remainder when n is divided by 5?

(A) 1
(B) 2
(C) 3
(D) 4
(E) It cannot be determined from the information given.

19. In the figure above, the triangle is equilateral, and the area of the square region is 100. What is the perimeter of the triangle?

(A) 10
(B) 30
(C) 50
(D) 60
(E) 75

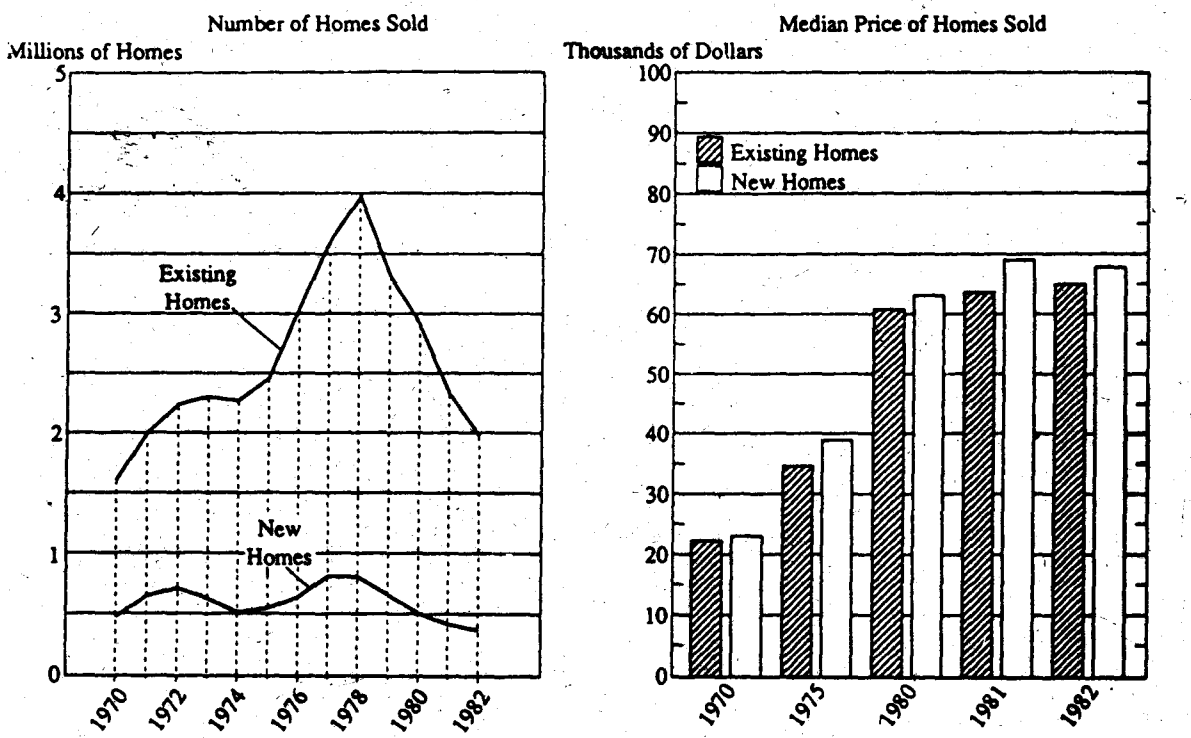
20. Tom ate $\frac{1}{4}$ of a whole pizza, and Jane ate $\frac{1}{5}$ of the remaining portion. What fraction of the pizza was not eaten?

(A) $\frac{11}{20}$
(B) $\frac{9}{20}$
(C) $\frac{3}{20}$
(D) $\frac{3}{5}$
(E) $\frac{2}{5}$

GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graphs.

EXISTING AND NEW ONE-FAMILY HOMES* SOLD IN THE UNITED STATES FROM 1970 TO 1982 AND THE MEDIAN SALE PRICE FOR SELECTED YEARS



*All references to homes in the data and test questions should be interpreted as one-family homes.

Note: Graphs drawn to scale.

21. According to the information in the graph, which of the following could be the actual number of new homes sold in 1980 ?

(A) 49,900
(B) 210,300
(C) 503,400
(D) 750,000
(E) 805,500

22. For which of the following years was there an increase over the previous year in the number of existing homes sold, but a decrease in the number of new homes sold?

(A) 1972
(B) 1973
(C) 1974
(D) 1977
(E) 1979

GO ON TO THE NEXT PAGE.

23. In the year shown in which the median price of existing homes sold was closest to the median price of new homes sold, approximately how many million existing homes were sold?

(A) 1.2
(B) 1.6
(C) 2.0
(D) 2.4
(E) 2.8

24. In 1977 the number of existing homes sold was approximately how many times the number of new homes sold?

(A) 3
(B) 3.5
(C) 4.5
(D) 5.5
(E) 6

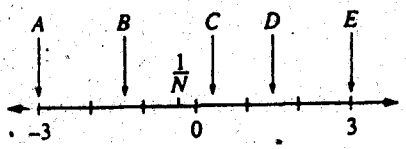
25. From 1970 to 1975, the percent increase in the median price of new homes sold was closest to

(A) 15%
(B) 25%
(C) 40%
(D) 50%
(E) 70%

GO ON TO THE NEXT PAGE.

26. If $x = 2$ and $y = -2$, then $2x - 2y =$

(A) -8
(B) 0
(C) 4
(D) 6
(E) 8



Note: Drawn to scale.

27. On the number line above, which arrow could be pointing to N?

(A) A
(B) B
(C) C
(D) D
(E) E

28. This year a city has allotted 60 percent of its budget for school expenditures, and its budget is 15 percent higher than last year's budget of n dollars. In terms of n, how many dollars of this year's budget has the city allotted for school expenditures?

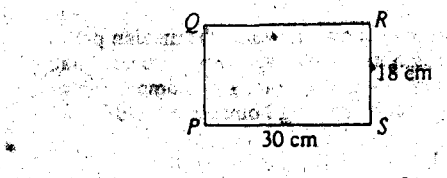
(A) $(0.6)(0.85n)$

(B) $(0.6)(1.15n)$

(C) $\frac{0.6n}{1.15}$

(D) $\frac{0.85n}{0.6}$

(E) $\frac{n}{1.15} + 0.6n$



29. What is the area, in square meters, of rectangular region $PQRS$ above? (1 meter = 100 centimeters)

(A) 0.054 square meter
(B) 0.54 square meter
(C) 5.4 square meters
(D) 54 square meters
(E) 5,400 square meters

30. The integers between 1 and 100, inclusive, are put in list A if they are divisible by 2 and in list B if they are divisible by 3. How many integers in list A are not in list B?

(A) 11
(B) 16
(C) 25
(D) 33
(E) 34

T12 S4

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
1.	$3 + \frac{4}{5}$	$5 - \frac{4}{3}$
2.	The yearly rent for a rectangular office with dimensions 100 feet by 200 feet at the annual rate of \$20 per square foot	\$500,000

E and F are two points on circle O.
Point G is inside circle O.
Point H is outside circle O.

3.	The degree measure of $\angle EGF$	The degree measure of $\angle EHF$

4.	The length of PQ	The length of RS

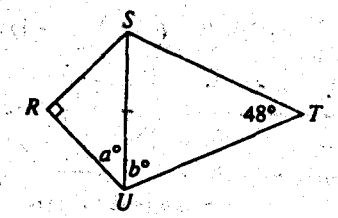
$x > 0$
$y - x = x$

5.	x	y

$a < 0$

6.	a	$-\lvert a \rvert$

	Column A	Column B



$RS = RU$ and $TS = TU$.

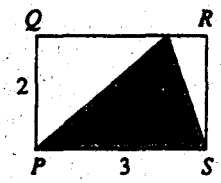
7.	$a + b$	110°

The cost of 48 cans of soda is \$20.

8.	At the same rate, the cost, in dollars, of n of these cans of soda	$(0.24)n$

$s + t = 7$ and $2t > 3$.

9.	s	t



10.	The area of the shaded triangular region in rectangle $PQRS$	3

GO ON TO THE NEXT PAGE.

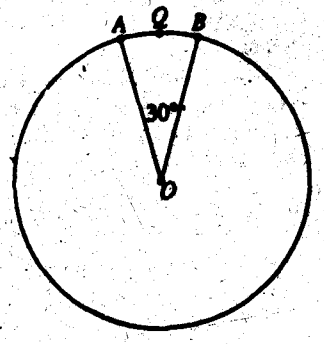
A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
	$x^2 + kx + 7 = (x - 7)(x - 1)$ for all x.	
11.	k	-7
12.	$(0.7777)^2$	$\sqrt{0.7777}$

n is a positive integer.

13. The remainder when $n(n + 1)$ is divided by 2 — 1

	Column A	Column B
	$(x - 1)(x + 2)(2x - 3)(3x - 6)(x + 1) = 0$	
14.	The number of possible values of x that are integers	4



The circle has center O and radius 1.

15. Length of arc AQB — $\frac{\pi}{6}$

GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. What value of x satisfies the equation $x - 1 = 1 - x$?

(A) 2
(B) 1
(C) 0
(D) -2
(E) No value

17. Which of the following pairs of distinct lines or line segments CANNOT be parallel?

(A) Two chords of a circle
(B) Two tangents to a circle
(C) Two diameters of a circle
(D) A chord of a circle and a tangent to the same circle
(E) A diameter of a circle and a tangent to the same circle

18. If $n - 1 = \frac{2}{3}$, then $n + 1 =$

(A) $\frac{4}{3}$ (B) $\frac{5}{3}$ (C) $\frac{7}{3}$ (D) $\frac{8}{3}$ (E) $\frac{11}{3}$

19. Karl's net income is always 80 percent of his gross income. What will be the increase in Karl's net income when his gross income increases from \$20,000 to \$25,000?

(A) \$5,000
(B) \$4,000
(C) \$3,000
(D) \$2,000
(E) \$1,000

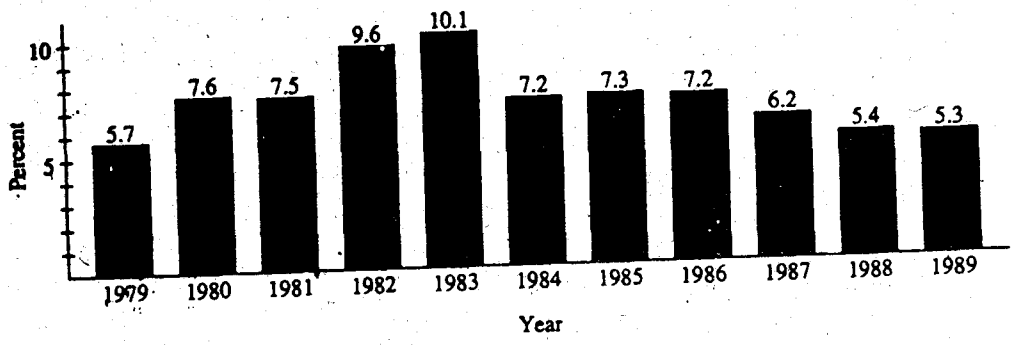
20. If a circular region has radius r and area k, then $\frac{k}{r}$ is equal to

(A) π (B) 2π (C) $\frac{\pi}{r}$ (D) $\frac{r}{\pi}$ (E) $r\pi$

GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graph and table.

UNITED STATES JUNE UNEMPLOYMENT RATES AS A PERCENT OF WORK FORCE
1979-1989



UNEMPLOYMENT DATA FOR THE ELEVEN STATES WITH THE LARGEST POPULATIONS IN 1989

State	Unemployment Rate May (as a percent of state work force)	Unemployment Rate June (as a percent of state work force)	Number of Unemployed June (in thousands)
California	5.5	5.6	797
New York	5.3	5.0	439
Texas	5.9	6.1	502
Illinois	5.7	5.5	325
Pennsylvania	4.6	4.0	239
Florida	6.4	6.1	384
Ohio	5.4	5.6	307
Michigan	6.7	7.3	339
New Jersey	3.0	4.2	165
North Carolina	3.7	3.6	124
Massachusetts	3.6	4.0	126

21. In June 1989, how many of the eleven states listed had an unemployment rate greater than that for the nation as a whole?

(A) Three
(B) Four
(C) Five
(D) Six
(E) Seven

22. Of the following states, which had the greatest increase in the unemployment rate from May to June of 1989?

(A) New York
(B) Texas
(C) Pennsylvania
(D) Michigan
(E) New Jersey

GO ON TO THE NEXT PAGE.

23. Of the following, which was the longest period of consecutive decreases in the United States June unemployment rates?

(A) 1985 to 1989
(B) 1984 to 1989
(C) 1984 to 1987
(D) 1983 to 1989
(E) 1983 to 1984

24. The change in the unemployment rate in the United States from June 1986 to June 1987 was how many times the change in the unemployment rate from June 1988 to June 1989 ?

(A) 0.01
(B) 0.1
(C) 1.0
(D) 10.0
(E) 100.0

25. In June 1989, if a total of 6.5 million people were unemployed in the United States, then the number of people unemployed in Ohio was approximately what percent of the 6.5 million?

(A) 5.5%
(B) 4.7%
(C) 3.7%
(D) 0.5%
(E) 0.4%

GO ON TO THE NEXT PAGE.

26. Multiplying which of the following by the nonzero number $\frac{5-2x}{7}$ will give a product of -1?

(A) $\frac{7}{5-2x}$

(B) $\frac{-7}{2x-5}$

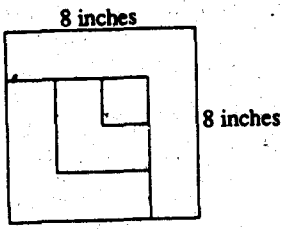
(C) $\frac{7}{2x-5}$

(D) $\frac{2x-5}{7}$

(E) $7(2x-5)$

27. If x is the smallest prime number greater than 31 and y is the largest prime number less than 58, then $x + y =$

(A) 94 (B) 90 (C) 89 (D) 88 (E) 86



28. The figure above shows a large square formed by fitting three L-shaped tiles and one small square tile together. If a rectangular floor 10 feet by 12 feet is to be tiled in large squares of this design, how many L-shaped tiles will be needed?

(A) 810
(B) 405
(C) 270
(D) 135
(E) 45

29. A manufacturer packages soap powder in containers of three different sizes. The amount of soap powder in a full large container could fill exactly 3 of the medium containers or exactly 5 of the small containers. If an equal number of small and large containers are to be filled with the amount of soap powder that would fill 90 medium containers, how many small containers will be filled?

(A) 25
(B) 27
(C) 30
(D) 45
(E) 54

30. Each of the following numbers has two digits blotted out. Which of the numbers could be the number of hours in x days, where x is an integer?

(A) 25■,■06
(B) 50■,■26
(C) 56■,■02
(D) 62■,■50
(E) 65■,■20

FOR GENERAL TEST 12 ONLY

Answer Key and Percentages* of Examinees Answering Each Question Correctly

VERBAL ABILITY					
Section 3			Section 6		
Number	Answer	P+	Number	Answer	P+
1	C	87	1	B	86
2	D	81	2	B	67
3	D	84	3	A	71
4	A	63	4	C	72
5	B	62	5	C	68
6	D	66	6	E	64
7	E	48	7	E	29
8	D	79	8	B	87
9	B	82	9	A	64
10	B	62	10	C	58
11	C	55	11	A	58
12	C	54	12	D	51
13	E	48	13	D	46
14	B	41	14	A	46
15	A	43	15	A	39
16	D	50	16	D	26
17	B	46	17	B	75
18	C	54	18	A	34
19	B	40	19	E	49
20	E	68	20	D	70
21	D	51	21	B	60
22	A	51	22	D	54
23	A	27	23	A	58
24	A	56	24	E	56
25	B	40	25	B	38
26	D	78	26	B	56
27	E	26	27	C	41
28	A	89	28	C	93
29	E	85	29	C	87
30	D	83	30	E	84
31	E	79	31	B	79
32	C	79	32	E	48
33	A	55	33	A	46
34	A	46	34	D	38
35	B	51	35	E	41
36	D	35	36	E	34
37	D	27	37	B	29
38	C	28	38	A	17

QUANTITATIVE ABILITY					
Section 1			Section 4		
Number	Answer	P+	Number	Answer	P+
1	A	94	1	A	78
2	D	89	2	B	91
3	B	73	3	D	84
4	B	70	4	B	72
5	C	60	5	B	79
6	A	85	6	C	73
7	A	59	7	A	68
8	D	26	8	A	64
9	A	64	9	D	69
10	A	74	10	C	57
11	B	49	11	B	56
12	C	36	12	B	53
13	B	35	13	B	45
14	C	52	14	C	38
15	D	24	15	C	47
16	C	83	16	B	87
17	E	81	17	C	73
18	A	63	18	D	77
19	B	75	19	B	79
20	D	39	20	E	61
21	C	86	21	D	88
22	B	68	22	E	87
23	B	62	23	A	84
24	C	52	24	D	73
25	E	40	25	B	40
26	E	78	26	C	48
27	A	45	27	B	37
28	B	64	28	A	29
29	A	36	29	A	25
30	E	26	30	E	19

ANALYTICAL ABILITY					
Section 2			Section 5		
Number	Answer	P+	Number	Answer	P+
1	B	85	1	D	83
2	E	77	2	B	88
3	E	61	3	C	58
4	D	60	4	C	50
5	A	58	5	B	45
6	C	40	6	E	44
7	C	64	7	B	70
8	A	62	8	D	87
9	A	81	9	A	80
10	D	72	10	E	84
11	D	60	11	D	78
12	A	73	12	C	69
13	B	48	13	C	56
14	B	36	14	A	53
15	D	17	15	A	35
16	E	19	16	D	28
17	B	67	17	E	41
18	A	52	18	A	50
19	D	41	19	C	48
20	A	32	20	E	33
21	E	31	21	D	34
22	E	35	22	A	25
23	C	51	23	D	67
24	E	38	24	C	70
25	B	44	25	D	37

*Estimated P+ for the group of examinees who took the GRE General Test in a recent three-year period.

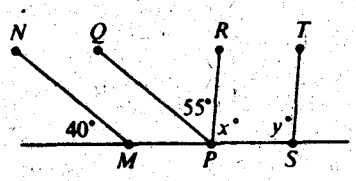
T 13 52

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
1.	$3{,}960 \div 65$	60

Team X scored 10 points in the first half of a certain game. In the second half of the game, team Y scored 15 points more than team X.

	Column A	Column B
2.	The number of points scored by team X in the first half of the game	The number of points scored by team Y in the first half of the game
3.	$\frac{5}{8}$	$\frac{7}{11}$



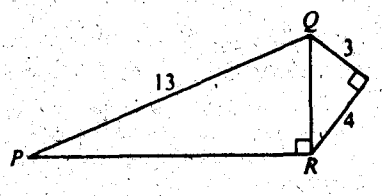
$MN \parallel PQ$ and $PR \parallel ST$

4.	$y - x$	15

$$\frac{3}{4}y - 5 = 7$$

5.	y	15
6.	90 percent of 30	13.5 percent of 200

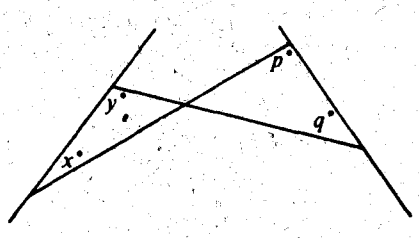
	Column A	Column B



7.	The perimeter of triangle PQR	36

$x > y > w > 0$

8.	$\frac{xy}{w}$	$\frac{yw}{x}$
9.	$4 + 2\sqrt{2}$	$2 + 4\sqrt{2}$

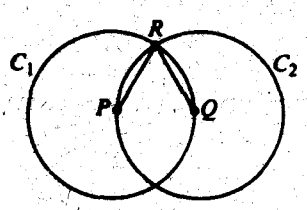


10.	$x + y$	$p + q$

GO ON TO THE NEXT PAGE

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

Column A	Column B
On a turntable, a record of radius 6 inches is rotating at the rate of 45 revolutions per minute.	
11. The number of inches traveled per minute by a point on the circumference of the record	The number of inches traveled per minute by a point on the record 5 inches from the center of the record
12. The greatest even factor of 180 that is less than 90	The greatest odd factor of 180



In circles C_1 and C_2, the length of segment PR equals the length of segment QR.

13. The circumference of circle C_1	The circumference of circle C_2

Column A	Column B
In a history class that consisted of 30 students, the number of seniors was 3 more than twice the number of juniors, and $\frac{3}{10}$ of the students were neither juniors nor seniors.	
14. The number of juniors in the class	6
15. $4x^2 + 4y^2$	$(2x + 2y)^2$

GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. If 25 percent of a certain number is 1,600, what is 10 percent of the number?

(A) 40
(B) 400
(C) 640
(D) 1,440
(E) 4,000

17. The ratio of 1.8 to 2 is equal to the ratio of

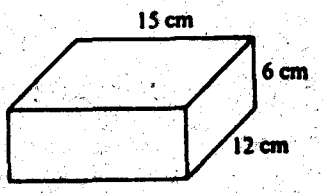
(A) 9 to 1
(B) 9 to 10
(C) 9 to 20
(D) 18 to 100
(E) 18 to 200

18. If $2x + 7 = 12$, then $4x - 7 =$

(A) 2 (B) 2.5 (C) 3 (D) 10 (E) 13

19. If $x + y = n$, then $x^2 + 2xy + y^2 =$

(A) $2n$
(B) n^2
(C) $n(x-y)$
(D) $n^2 + 2y(n-y)$
(E) $n^2 + xn - x^2$



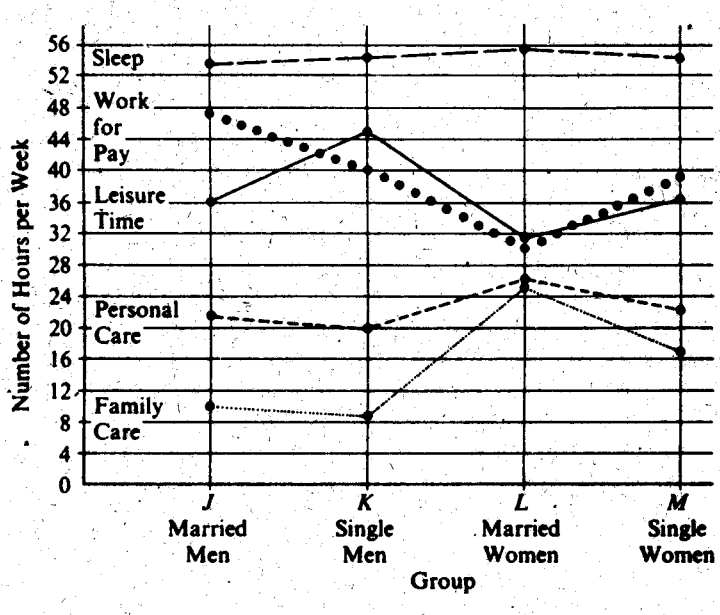
20. What is the maximum number of cubes, each 3 centimeters on an edge, that can be packed into a rectangular box with inside dimensions as shown above?

(A) 360 (B) 120 (C) 90 (D) 40 (E) 20

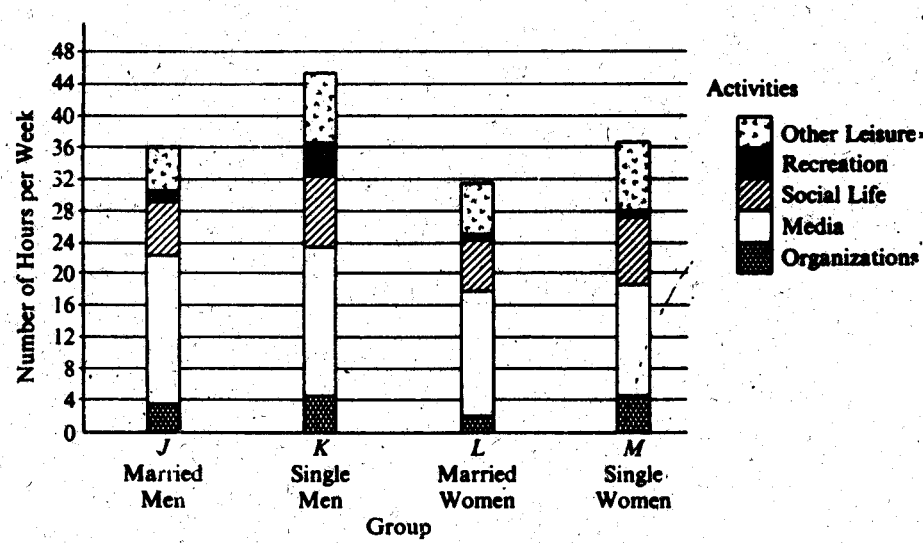
GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graphs.

AVERAGE NUMBER OF HOURS PER WEEK SPENT IN MAJOR TYPES OF ACTIVITIES BY EMPLOYED PERSONS



AVERAGE NUMBER OF HOURS PER WEEK SPENT IN LEISURE-TIME ACTIVITIES BY EMPLOYED PERSONS.



Note: Graphs drawn to scale.

GO ON TO THE NEXT PAGE.

21. In which major type of activity is the average number of hours spent per week most nearly the same for all four groups?

(A) Sleep
(B) Work for pay
(C) Leisure time
(D) Personal care
(E) Family care

22. Approximately what is the average number of hours per week that employed single women spend in leisure-time activities?

(A) 47 (B) 39 (C) 37 (D) 30 (E) 17

23. Approximately what is the average number of hours per week that employed married men spend on media activities?

(A) 12
(B) 16
(C) 19
(D) 22
(E) 25

24. Which of the following lists the four groups from least to greatest with respect to the average number of hours per week that each spends working for pay?

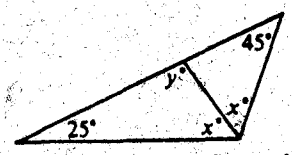
(A) J, K, M, L
(B) J, L, M, K
(C) L, J, M, K
(D) L, K, M, J
(E) L, M, K, J

25. Approximately what percent of the average number of hours per week spent in leisure-time activities by employed single men is spent on social-life activities?

(A) 5% (B) 9% (C) 15%
(D) 20% (E) 27%

26. If x is an integer and $y = 9x + 13$, what is the greatest value of x for which y is less than 100?

(A) 12 (B) 11 (C) 10 (D) 9 (E) 8



27. What is the value of y in the figure above?

(A) 70 (B) 80 (C) 90
(D) 100 (E) 110

28. What is the perimeter, in meters, of a rectangular playground 24 meters wide that has the same area as a rectangular playground 64 meters long and 48 meters wide?

(A) 112
(B) 152
(C) 224
(D) 256
(E) 304

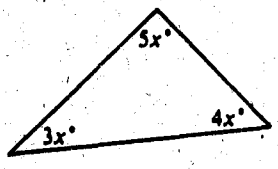
29. Saplings are to be planted 30 feet apart along one side of a straight lane 455 feet long. If the first sapling is to be planted at one end of the lane, how many saplings are needed?

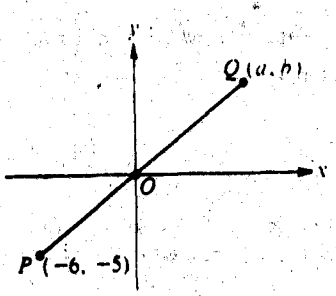
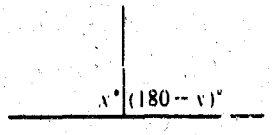
(A) 18 (B) 16 (C) $15\frac{1}{6}$ (D) 15 (E) 14

30. The average (arithmetic mean) of five numbers is 25. After one of the numbers is removed, the average (arithmetic mean) of the remaining numbers is 31. What number has been removed?

(A) 1
(B) 6
(C) 11
(D) 24
(E) It cannot be determined from the information given.

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
1.	$\frac{2}{3}\left(1-\frac{1}{3}\right)$	$\frac{2}{9}$
	$n = \frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}$	
2.	$1-n$	$\frac{1}{16}$
3.	5^3	3^5
	R and S are distinct points on a circle of radius 1.	
4.	The length of line segment RS	2
	$x < 5$ and $y > 12$.	
5.	$y-x$	7
6.	 x	20
7.	$\frac{\sqrt{8}}{\sqrt{2}}$	$\frac{\sqrt{12}}{\sqrt{3}}$

	Column A	Column B
		
8.	a	b
	$3x = 4y$ $xy \neq 0$	
9.	The ratio of x to y	The ratio of y to x
		
10.	x	$180 - x$

GO ON TO THE NEXT PAGE

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
	The area of a circular region having a radius of $\frac{1}{4}$ meter is x square meters.	
11.	x	$\frac{1}{4}$
12.	The cost of x pounds of meat at y dollars per pound	The cost of y yards of material at x dollars per yard
	$(a + 5)(a - 5) = 0$ $(b + 5)(b - 5) = 0$	
13.	$a + 5$	$b + 5$

	Column A	Column B
	Average (arithmetic mean) of Test Scores in Class R Average score for the boys 90 Average score for the girls 81 Average score for the class 84	
14.	The number of boys in the class who took the test	The number of girls in the class who took the test
	$x > 1$ $y > 1$	
15.	$\frac{1}{\frac{1}{x} + \frac{1}{y}}$	$\frac{1}{x} + \frac{1}{y}$

GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. If $\frac{1}{7}$ of a certain number is 4, then $\frac{1}{4}$ of the number is

(A) $\frac{7}{16}$
(B) 2
(C) $\frac{16}{7}$
(D) 7
(E) 28

17. At College C there are from 2 to 4 introductory philosophy classes each semester, and each of these classes has from 20 to 30 students enrolled. If one semester 10 percent of the students enrolled in introductory philosophy failed, what is the greatest possible number who failed?

(A) 12
(B) 10
(C) 8
(D) 6
(E) 3

18. The lengths of the sides of triangle T are $x + 1$, $2x$, and $3x$. The sum of the degree measures of the three interior angles of T is

(A) $6x$
(B) $60x$
(C) 90
(D) 180
(E) not determinable from the information given

19. Today is Jack's 12th birthday and his father's 40th birthday. How many years from today will Jack's father be twice as old as Jack is at that time?

(A) 12
(B) 14
(C) 16
(D) 18
(E) 20

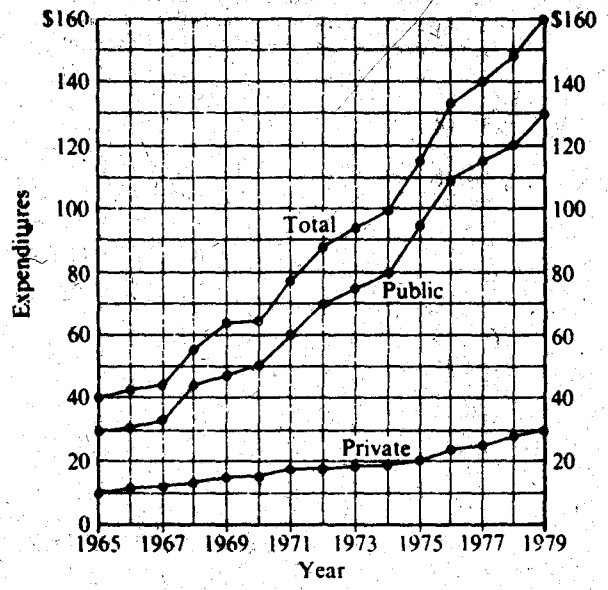
20. If $a + b = 10$, then $\left(a + \frac{b}{2}\right) + \left(b + \frac{a}{2}\right) =$

(A) 5
(B) 10
(C) 15
(D) 20
(E) 25

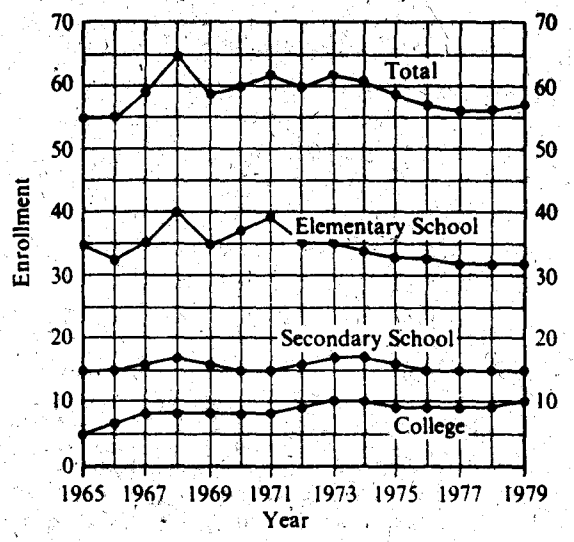
GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graphs.

PUBLIC AND PRIVATE SCHOOL EXPENDITURES
1965-1979
(in billions of dollars)
(1 billion = 1,000,000,000)



SCHOOL ENROLLMENT BY LEVEL OF INSTRUCTION
1965-1979
(in millions of students)



21. Of the following years, which showed the least difference between public school expenditures and private school expenditures?

(A) 1965
(B) 1970
(C) 1974
(D) 1978
(E) 1979

22. For each year from 1965 to 1979, the total enrollment in college, secondary school, and elementary school was in which of the following ranges?

(A) 50 to 60 million
(B) 55 to 60 million
(C) 55 to 65 million
(D) 60 to 65 million
(E) 60 to 70 million

23. In 1970, approximately how many billion dollars were spent on public elementary schools?

(A) 37
(B) 50
(C) 60
(D) 87
(E) It cannot be determined from the information given.

24. Which of the following periods showed a continual increase in the total school enrollment?

(A) 1967-1969
(B) 1969-1971
(C) 1971-1973
(D) 1973-1975
(E) 1975-1977

25. In 1972, public school expenditures were approximately what percent of the total school expenditures for that year?

(A) 20%
(B) 60%
(C) 70%
(D) 80%
(E) 90%

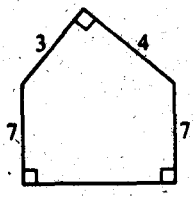
GO ON TO THE NEXT PAGE.

26. If the sum of the first n positive integers is equal to $\frac{n(n+1)}{2}$, then the sum of the first 25 positive integers is

(A) 51
(B) 52
(C) 313
(D) 325
(E) 326

27. If $\frac{2x-1}{3} = \frac{12}{9}$, then $x =$

(A) $\frac{3}{2}$
(B) $\frac{5}{2}$
(C) 4
(D) $\frac{13}{2}$
(E) 7



28. What is the perimeter of the pentagon above?

(A) 21
(B) 26
(C) 28
(D) 31
(E) 41

29. If x is positive and y is 1 less than the square of x, which of the following expresses x in terms of y?

(A) $x = y^2 - 1$
(B) $x = y^2 + 1$
(C) $x = \sqrt{y+1}$
(D) $x = \sqrt{1-y}$
(E) $x = \sqrt{y+1}$

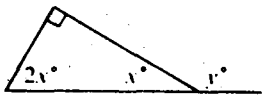
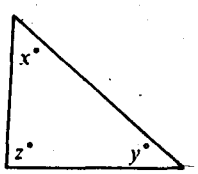
30. If the total surface area of a cube is 24, what is the volume of the cube?

(A) 8
(B) 24
(C) 64
(D) $48\sqrt{6}$
(E) 216

T14 S2

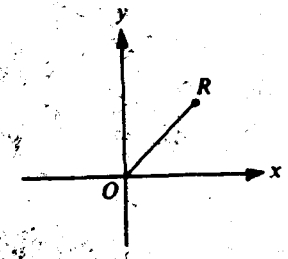
A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

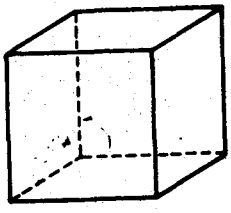
	Column A	Column B
1.	The average (arithmetic mean) of 15, 16, and 180	The average (arithmetic mean) of 57, 58, and 60
	$x + 3 = 23$ $24 - y = 3$	
2.	x	y
	12 is $\frac{2}{3}$ of n.	
3.	$2n$	16
4.	$11 + (-12) + 13 + (-14)$	$2(-1)$
5.	The cost per gram of carrots if 3 cans of carrots cost \$0.90	The cost per gram of onions if 5 cans of onions cost \$1.50
6.	$8 + \left(6 \cdot \frac{1}{14}\right)$	$8 + \frac{3}{7}$
7.	$\frac{6}{7}$	$\frac{5}{6}$
	$r > 0$	
8.	The area of a square region with side r	The area of a circular region with radius r

	Column A	Column B
	$\frac{1}{x} = 3$	
9.	x	1
		
10.	y	120
	A certain car gets 24 miles per gallon of gasoline for city driving, which is 60 percent of the number of miles per gallon of gasoline the car gets for highway driving.	
11.	The number of gallons of gasoline used to drive this car 30 miles in the city	The number of gallons of gasoline used to drive this car 45 miles on the highway
		
12.	$x + y$	z

GO ON TO THE NEXT PAGE.

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

Column A	Column B
	
R is a point in the rectangular coordinate system and $OR = 5$.	
13. The x coordinate of point R	5
$x > 0$ $n > 0$	
14. $\frac{x^n}{x^{n+1}}$	$\frac{x^{n+1}}{x^n}$

Column A	Column B
	
The volume of the cube is x cubic meters and the surface area is x square meters.	
15. The length of an edge	6 meters

GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. $\dfrac{(12)(27) - (27)(5)}{12 - 5} =$

(A) 0 (B) 1 (C) $\frac{60}{7}$ (D) 27 (E) 189

7	8	9	10	11
16	15	14	13	12
17	18	19	20	21
26	25	24	23	22
27	28	29	30	31

17. The figure above consists of 25 squares. If the figure were folded along the dotted diagonal to form a flat triangle, then 26 minus the number in the square that would coincide with the square containing 26 would be

(A) 13 (B) 14 (C) 15 (D) 16 (E) 17

18. If $D = (S - W)T$ and $D \neq 0$, then $S =$

(A) $W - \frac{T}{D}$

(B) $\frac{D}{T} + W$

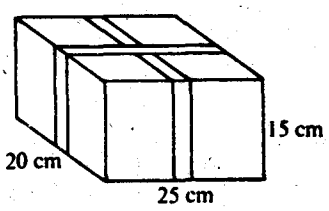
(C) $DT - W$

(D) $DT + W$

(E) $D + WT$

19. The selling price of a certain book is \$12.00. For each copy of the book sold, the author receives \$2.40. What percent of the selling price does the author receive?

(A) 20% (B) 5% (C) 2%
(D) 0.5% (E) 0.2%



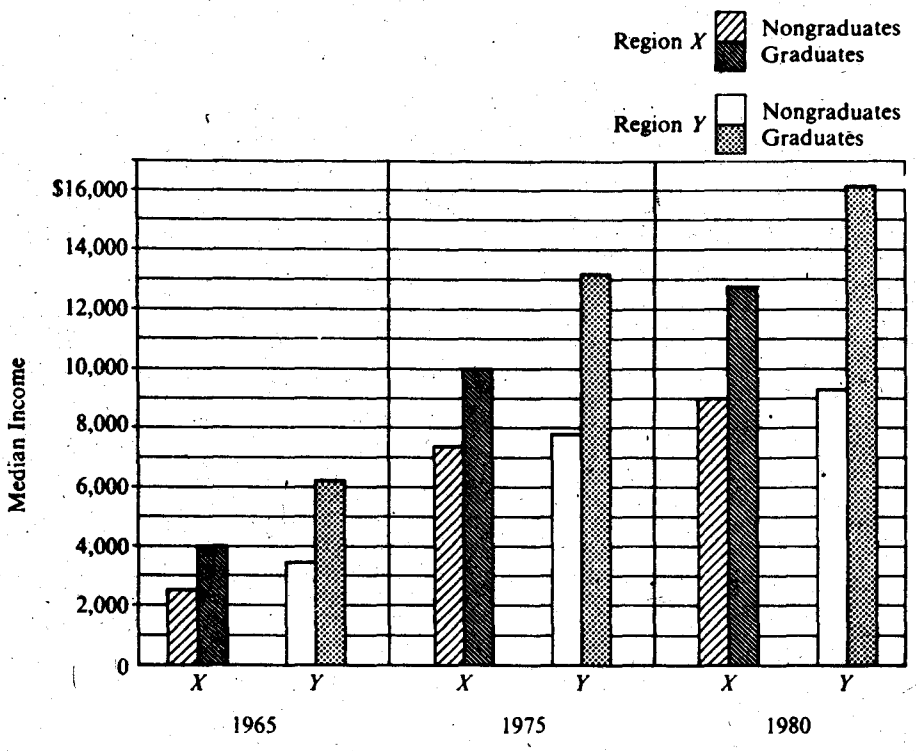
20. The rectangular box shown above has been wrapped with two tapes, each going once around the box without overlap and running parallel to the edges of the box. How many centimeters of tape were used on the box?

(A) 70 (B) 80 (C) 120 (D) 140 (E) 150

GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graph.

MEDIAN INCOME OF
COLLEGE GRADUATES *VS.* NONGRADUATES
IN REGIONS *X* AND *Y*



Note: Graph drawn to scale.

GO ON TO THE NEXT PAGE.

21. The median income of graduates in Region X in 1980 was most nearly equal to the median income of

(A) graduates in Region X in 1975
(B) graduates in Region Y in 1975
(C) graduates in Region Y in 1980
(D) nongraduates in Region X in 1980
(E) nongraduates in Region Y in 1980

22. For nongraduates in Region X, the median income in 1980 was approximately how many times as great as it was in 1965 ?

(A) 2 (B) 2.5 (C) 3 (D) 3.5 (E) 5

23. Of the following 1980 median-income ratios, the greatest was the ratio of the median incomes of

(A) graduates in Region Y to graduates in Region X
(B) nongraduates in Region Y to nongraduates in Region X
(C) graduates in Region Y to nongraduates in Region Y
(D) graduates in Region X to nongraduates in Region X
(E) graduates in Region X to nongraduates in Region Y

24. From 1965 to 1975 in Region X, the increase in the median income of graduates was how much more than that of nongraduates?

(A) $5,000
(B) $3,000
(C) $2,500
(D) $2,000
(E) $1,000

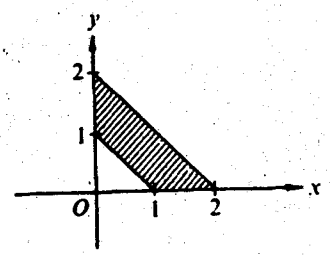
25. For how many of the four categories given did the median income increase by at least 30 percent from 1975 to 1980 ?

(A) None
(B) One
(C) Two
(D) Three
(E) Four

GO ON TO THE NEXT PAGE.

26. Which of the following indicates all x such that $x^2 < x$?

(A) $-1 < x < 0$
(B) $-1 < x < 1$
(C) $0 < x < 1$
(D) $x < 0$
(E) $x \geq 1$

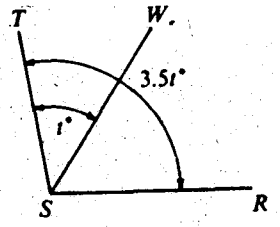


27. In the rectangular coordinate system above, the area of the shaded region is

(A) $1\frac{1}{2}$ (B) 2 (C) $2\frac{1}{2}$ (D) 3 (E) 4

28. Which of the following equals $x + xy + (x + xy)y$?

(A) $x(1 + y)^2$
(B) $x(2 + y + y^2)$
(C) $2x(1 + y) + y$
(D) $2xy(1 + y)$
(E) $x^2(1 + y^2)y$



29. If $t = 40$, what is the degree measure of $\angle WSR$?

(A) 140 (B) 120 (C) 110 (D) 100 (E) 80

30. What is the distance between two points on a number line if the coordinates of the points are $4 + \sqrt{5}$ and $2 - \sqrt{5}$?

(A) $2 - 2\sqrt{5}$
(B) $2 + 2\sqrt{5}$
(C) $6 + 2\sqrt{5}$
(D) 2
(E) 6

T14 S5

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
1.	$(7 \times 20) + (7 \times 4)$	$(7 \times 25) - 1$

$\frac{4}{1.2} = \frac{n}{0.9}$

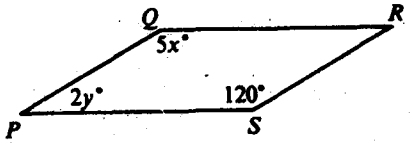
2.	n	3.7
3.	$\frac{2}{3} + \frac{2}{3}$	$\left(\frac{2}{3}\right)\left(\frac{2}{3}\right)$

$x = y$
$y = z$

4.	$x + 1$	$z - 1$

If checks of \$455 and x dollars are deducted from a checking account that has a balance of \$800, then \$305 of the balance will be left.

5.	x	45



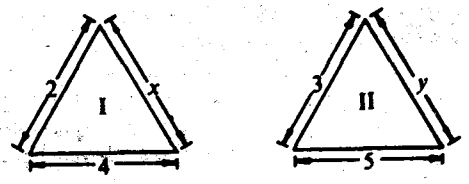
PQRS is a parallelogram.

6.	x	y

	Column A	Column B

$n > 0$

7.	$\frac{n^2 + 2}{n}$	$n + \frac{1}{n}$



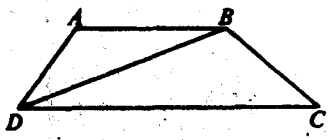
The perimeter of triangle I equals the perimeter of triangle II.

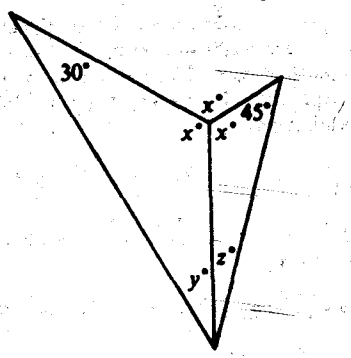
8.	x	y

9.	The number of minutes in y weeks	The number of hours in $60y$ weeks

GO ON TO THE NEXT PAGE.

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
10.	 $AB \parallel DC$ and $DC > AB$. Area of triangular region ABD / Area of triangular region DBC	$\frac{1}{2}$
11.	The ratio of the circumference to the diameter of a circle that has radius 6	The ratio of the circumference to the diameter of a circle that has radius 6.5
12.	8^6	4^9

	Column A	Column B
13.	 z	20
14.	$\frac{x^m}{x^3}$	$x^{\frac{m}{3}}$
15.	The greatest prime factor of $(2^4)^2 - 1$	17

GO ON TO THE NEXT PAGE

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. A certain writer noted that, on the average, 3 pages of a manuscript were equivalent to 1 page of the published book. If the writer has a 302-page manuscript, about how many pages will the published book have?

(A) 100 (B) 150 (C) 300 (D) 600 (E) 900

17. If $x - y = 0$, then xy must equal which of the following?

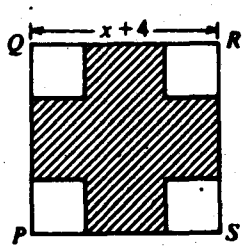
(A) 0 (B) 1 (C) x (D) x^2 (E) x^2y

18. If $\frac{13}{4} - \frac{7}{7} = n$, then n is

(A) greater than 3
(B) between 2 and 3
(C) between 1 and 2
(D) between 0 and 1
(E) less than 0

19. In the repeating decimal $0.01579015790\cdots$, the 29th digit to the right of the decimal point is

(A) 0 (B) 1 (C) 5 (D) 7 (E) 9



20. In the figure above, square $PQRS$ has side of length $x + 4$ and each of the four smaller squares has side of length 2. If the area of the shaded region is 48, what is the value of x?

(A) 1 (B) 4 (C) $4\sqrt{2}$ (D) 8 (E) 12

GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following table.

UNITED STATES POPULATION
(official census 1890-1980)

Year	Population (in millions)	10-year Increase (in millions)	Year	Population (in millions)	10-year Increase (in millions)
1890	62.9		1940	131.7	8.9
1900	76.0	13.1	1950	150.7	19.0
1910	92.0	16.0	1960	179.3	28.6
1920	105.7	13.7	1970	203.2	23.9
1930	122.8	17.1	1980	223.9	20.7

21. By how many million did the United States population increase from 1920 to 1950 ?

(A) 5.3 (B) 19.0 (C) 45.0
(D) 74.7 (E) 87.8

22. During which of the following 10-year intervals was the United States population increase the least in actual number?

(A) 1890-1900
(B) 1900-1910
(C) 1920-1930
(D) 1930-1940
(E) 1940-1950

23. By approximately what percent did the population of the United States increase from 1900 to 1980 ?

(A) 1.6%
(B) 2.56%
(C) 17%
(D) 116%
(E) 195%

24. In which of the following years will the United States population first reach 260 million?

(A) 1990 (B) 1995 (C) 2000 (D) 2005
(E) It cannot be determined from the information given.

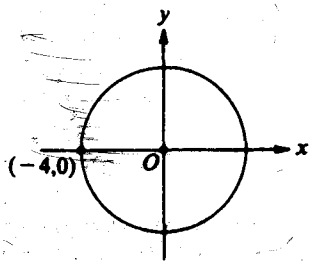
25. If the percent increase in population from 1910 to 1920 had been approximately the same as the percent increase from 1900 to 1910, the 10-year increase, in millions, from 1910 to 1920, would have been approximately

(A) 3
(B) 6
(C) 16
(D) 19
(E) 29

GO ON TO THE NEXT PAGE.

26. The Acme Rent-a-Car agency charges \$10.00 per day and \$0.10 per mile to rent a car. The Super Rent-a-Car agency charges \$20.00 per day and \$0.05 per mile to rent a car. If a car is rented for 1 day, at how many miles would the rental charges of the two agencies be equal?

(A) 50
(B) 100
(C) 150
(D) 175
(E) 200



27. If O is the center of the circle above, what is the circumference of the circle?

(A) 4π (B) 8π (C) 16π (D) 32π (E) 64π

28. If $r = \frac{1}{3}(r + R)$, then what is r in terms of R?

(A) $\frac{1}{3}R$

(B) $\frac{1}{2}R$

(C) $R + 2$

(D) $2R$

(E) $3R$

29. If the average (arithmetic mean) of 5, 9, k, and m is 12, what is the average of $k + 7$ and $m - 3$?

(A) 14
(B) 17
(C) 19
(D) 21
(E) 38

30. The length of rectangular field X is 2 kilometers greater than the side of square field Y, and the width of field X is 2 kilometers less than the side of field Y. If y^2 is the area of field Y in square kilometers, which of the following gives the area, in square kilometers, of field X?

(A) $y^2 - 4$
(B) $y^2 - 2$
(C) y^2
(D) $y^2 + 2$
(E) $y^2 + 4$

FOR GENERAL TEST 14 ONLY

Answer Key and Percentages* of Examinees Answering Each Question Correctly

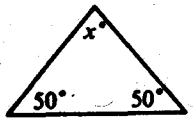
VERBAL ABILITY					
Section 1			Section 6		
Number	Answer	P+	Number	Answer	P+
1	A	97	1	C	88
2	C	83	2	E	84
3	A	74	3	E	76
4	E	51	4	B	95
5	A	43	5	E	58
6	B	41	6	D	67
7	D	28	7	D	9
8	E	92	8	A	92
9	C	80	9	B	88
10	D	50	10	C	83
11	D	56	11	D	62
12	A	33	12	E	55
13	C	43	13	A	48
14	A	41	14	A	43
15	D	28	15	E	34
16	E	20	16	E	21
17	C	83	17	D	68
18	D	65	18	B	77
19	B	81	19	A	38
20	C	64	20	E	53
21	B	76	21	B	67
22	A	56	22	D	31
23	D	68	23	A	37
24	D	39	24	A	44
25	B	68	25	B	58
26	E	74	26	C	44
27	A	60	27	D	70
28	A	88	28	D	86
29	B	84	29	D	80
30	B	72	30	C	85
31	D	57	31	C	66
32	D	50	32	E	49
33	A	42	33	B	54
34	B	34	34	C	42
35	A	39	35	C	46
36	B	32	36	A	39
37	B	37	37	E	37
38	D	28	38	E	26

QUANTITATIVE ABILITY					
Section 2			Section 5		
Number	Answer	P+	Number	Answer	P+
1	A	90	1	B	86
2	B	91	2	B	83
3	A	79	3	A	87
4	C	85	4	A	80
5	D	74	5	B	82
6	C	83	6	B	63
7	A	80	7	A	81
8	B	85	8	A	67
9	B	79	9	C	66
10	A	69	10	D	70
11	A	57	11	C	49
12	D	59	12	C	35
13	B	54	13	B	49
14	D	25	14	D	41
15	C	16	15	C	26
16	D	79	16	A	95
17	D	79	17	D	89
18	B	74	18	B	80
19	A	84	19	D	87
20	E	72	20	B	90
21	B	91	21	C	91
22	D	65	22	D	74
23	C	71	23	E	62
24	E	61	24	E	71
25	A	44	25	D	33
26	C	53	26	E	60
27	A	56	27	B	60
28	A	52	28	B	52
29	D	52	29	C	48
30	B	49	30	A	45

ANALYTICAL ABILITY					
Section 3			Section 4		
Number	Answer	P+	Number	Answer	P+
1	B	87	1	E	88
2	E	89	2	E	83
3	C	81	3	D	51
4	E	90	4	B	77
5	C	74	5	C	80
6	E	29	6	C	82
7	D	87	7	E	92
8	B	75	8	C	90
9	B	56	9	B	74
10	A	92	10	A	57
11	D	90	11	B	54
12	B	81	12	E	61
13	A	89	13	A	92
14	C	65	14	A	33
15	E	75	15	D	15
16	A	56	16	D	55
17	E	34	17	C	78
18	C	61	18	A	67
19	C	41	19	C	62
20	D	33	20	A	41
21	E	31	21	E	45
22	E	28	22	E	34
23	A	85	23	B	62
24	C	53	24	D	45
25	C	38	25	D	45

*Estimated P+ for the group of examinees who took the GRE General Test in a recent three-year period.

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
		
1.	x	100
2.	2^5	5^2
	$x = 3$	
3.	$4x^2$	144
	$r + 5 = 7$ $s - 5 = 8$	
4.	$r + s$	15
5.	The average (arithmetic mean) of 67, 78, and 89	The average (arithmetic mean) of 66, 78, and 89

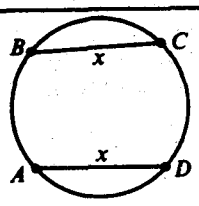
When Fred drives from his home to the nearest mountain resort, it takes 4 hours at an average speed of 50 miles per hour. When Fred drives from his home to his beach house, it takes 3.5 hours at an average speed of 55 miles per hour.

6.	Fred's driving distance from his home to the nearest mountain resort	Fred's driving distance from his home to his beach house

	Column A	Column B
7.	$\frac{4}{\sqrt{2}}$	$\sqrt{2}$
	$x(x + 1) + 1 = x + 1$	
8.	x	0

When Carl and Linda started to diet, Carl's starting weight was 8 pounds more than Linda's starting weight. At the end of the diet, each had lost 15 pounds.

9.	Percent of Carl's starting weight lost on the diet	Percent of Linda's starting weight lost on the diet
10.	The area of a circular region that has radius 5 centimeters	Six times the area of a circular region that has radius 2 centimeters

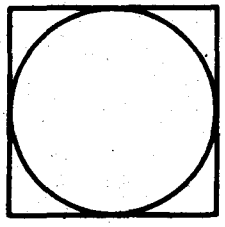


11.	The length of arc ABC	The length of arc ADC

GO ON TO THE NEXT PAGE.

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

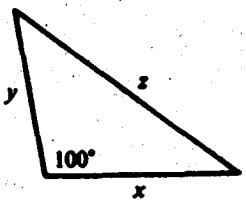
	Column A	Column B
	$n \neq 0$	
12.	$\frac{n}{12}$	$\frac{n \div 4}{3}$
	$x = 1 - y$	
13.	x	y



A circular tabletop is to be cut from a square piece of wood as shown above.

14.	Percent of the wood surface shown above that is not to be used for the tabletop	25%

	Column A	Column B
15.	$x^2 + y^2$	z^2



GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. If $y = 2$, then $y + (y^2)^3 =$

(A) 32 (B) 34 (C) 64 (D) 66 (E) 12^8

17. If $6 + 5x = 30 - x$, then $x =$

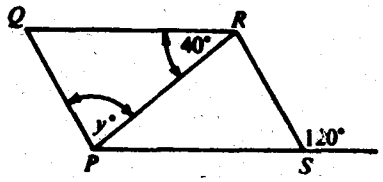
(A) 4 (B) 5 (C) 6 (D) 7 (E) 8

18. Which of the following is equal to $456(72) + 28(456)$?

(A) $(72)(456 + 28)$
(B) $(456)(72 + 28)$
(C) $(456 + 28)(72 + 456)$
(D) $(456 + 72)(28 + 456)$
(E) $(456 + 456)(72 + 28)$

19. Which of the following equals the ratio of $2\frac{1}{2}$ to $3\frac{1}{2}$?

(A) 2 to 3
(B) .5 to 7
(C) 3 to 2
(D) 7 to 5
(E) 35 to 4



20. In the figure above, if $PQRS$ is a parallelogram, then $y =$

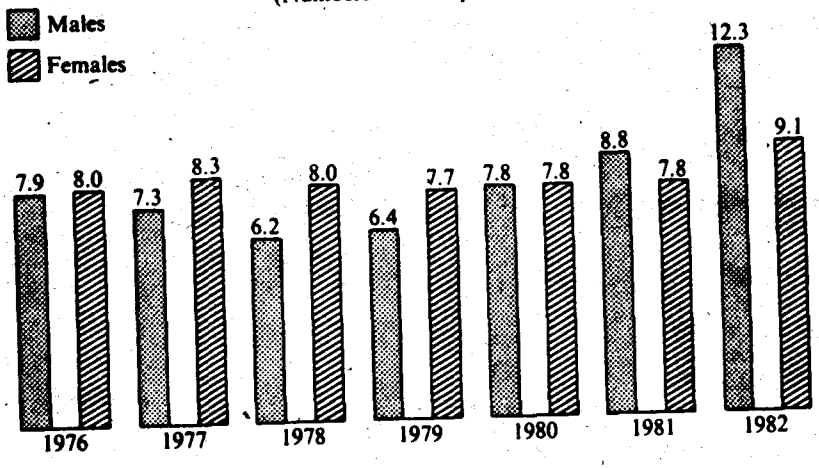
(A) 20 (B) 40 (C) 60 (D) 80 (E) 100

GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graph.

STATE Z UNEMPLOYMENT RATES*

(Numbers indicate percents.)



*Rates are based on male and female labor forces, respectively.

21. For how many of the years shown was the unemployment rate for females less than the unemployment rate for males?

(A) One (B) Two (C) Three
(D) Four (E) Five

22. For how many of the years from 1977 through 1982, inclusive, did the unemployment rate for males increase over the rate for males the previous year?

(A) One (B) Two (C) Three
(D) Four (E) Five

23. In State Z in 1982, the total labor force was 1 million, of which 55 percent were males. If the unemployment rate for males is defined as the ratio of the number of unemployed males to the number of males in the labor force, what was the approximate number of unemployed males in State Z in 1982?

(A) 70,000
(B) 55,000
(C) 50,000
(D) 40,000
(E) 15,000

24. What was the unemployment rate (including both males and females) in State Z during 1977?

(A) 7.8%
(B) 8.3%
(C) 15.6%
(D) 16.6%
(E) It cannot be determined from the information given.

25. Which of the following statements about unemployment in State Z can be inferred from the graph?

I. The same number of females were unemployed in 1981 as in 1980.
II. The unemployment rate for males in 1982 was more than $1\frac{1}{2}$ times the rate for males in 1976.
III. From 1978 to 1979, the number of unemployed males increased.

(A) None (B) I only (C) II only
(D) III only (E) I, II, and III

GO ON TO THE NEXT PAGE.

26. In a class of 120 students, 60 percent can speak French and the rest can speak only English. If 25 percent of those in the class who can speak French can also speak English, how many of the students in the class can speak English?

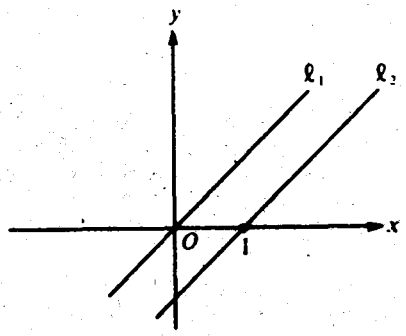
(A) 54
(B) 60
(C) 66
(D) 84
(E) 90

27. If $k = \frac{6x}{7}$ and $k \neq 0$, then $\frac{2x}{7k} =$

(A) $\frac{1}{6}$ (B) $\frac{12}{49}$ (C) $\frac{2}{7}$ (D) $\frac{1}{3}$ (E) $\frac{6}{7}$

28. The dimensions, in centimeters, of rectangular box R are 6 by 8 by 10. Which of the following CANNOT be the total surface area, in square centimeters, of two faces of R?

(A) 96 (B) 120 (C) 128
(D) 160 (E) 180



29. In the rectangular coordinate system above, if the equation of ℓ_1 is $y = x$ and $\ell_1 \parallel \ell_2$, what is the shortest distance between ℓ_1 and ℓ_2?

(A) $\sqrt{2}$ (B) 1 (C) $\frac{\sqrt{2}}{2}$ (D) $\frac{1}{2}$ (E) $\frac{1}{4}$

30. The positive quantities x, y, and z vary over time, and $\frac{2x}{3}$ always equals $16yz$. If y is tripled and z is halved, then x is

(A) decreased by 50%
(B) decreased by $33\frac{1}{3}\%$
(C) unchanged
(D) increased by $33\frac{1}{3}\%$
(E) increased by 50%

T15, S6

A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B
	$x^2 = 3$ $y = 2$	
1.	x	y

At a grocery store Ray paid \$1.85 for 5 pounds of potatoes and \$1.29 for 3 pounds of apples.

	Column A	Column B
2.	The amount Ray paid per pound for the potatoes	The amount Ray paid per pound for the apples

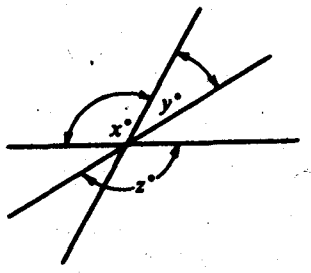
	Column A	Column B
	$ab \neq 0$	
3.	$\frac{a+b}{a}$	$\frac{a+b}{b}$

	Column A	Column B
4.	$\frac{11}{20}$	0.54

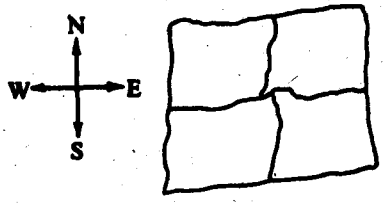
Triangle A has vertices (0,0), (0,4), and (3,0), and triangle B has vertices (0,0), (−3,0), and (0,−4).

	Column A	Column B
5.	The area of A	The area of B

	Column A	Column B
	$x + 2 = 3 - x$	
6.	x	1

	Column A	Column B
		
	The three lines above intersect at a single point.	
7.	$z - y$	x

	Column A	Column B
8.	$\frac{1}{5}$	$\frac{1}{5} - \frac{1}{6} + \frac{1}{7} - \frac{1}{8} + \frac{1}{9}$



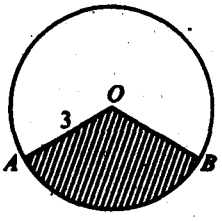
A precinct is divided into four wards as shown. The two northern wards have exactly 30 Democrats each and the two eastern wards have an average (arithmetic mean) of 35 Democrats per ward.

	Column A	Column B
9.	The average (arithmetic mean) number of Democrats in the two southern wards	25

GO ON TO THE NEXT PAGE.

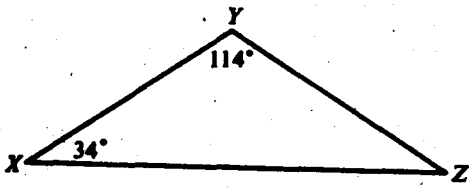
A if the quantity in Column A is greater;
B if the quantity in Column B is greater;
C if the two quantities are equal;
D if the relationship cannot be determined from the information given.

	Column A	Column B



O is the center of the circle. The area of the shaded region is 3π.

10.	The degree measure of $\angle AOB$	120
11.	$(0.4)^6$	$(1 - 0.6)^4$



12.	The length of XY	The length of YZ

	Column A	Column B

k is a digit in the decimal $1.3k5$, and $1.3k5$ is less than 1.32.

13.	k	1
14.	$(2\sqrt{7} + 3)(2\sqrt{7} - 3)$	19

John has a flat square garden with a perimeter of x feet. David has a flat rectangular garden with a perimeter of x feet and the length 1 foot longer than the width.

15.	The area of John's garden	The area of David's garden

GO ON TO THE NEXT PAGE.

Directions: Each of the Questions 16-30 has five answer choices. For each of these questions, select the best of the answer choices given.

16. If $2x + y = 10$ and $2x = 4$, then $y =$

(A) 2 (B) 6 (C) 7 (D) 8 (E) 14

17. $\dfrac{4}{\frac{3}{3}} =$

(A) $\frac{1}{4}$ (B) 3 (C) 4 (D) 12 (E) 36

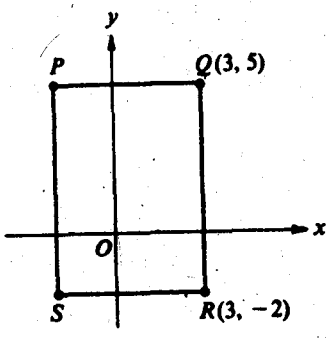
18. The illumination E, in footcandles, provided by a light source of intensity I, in candles, at a distance D, in feet, is given by $E = \dfrac{I}{D^2}$. For an illumination of 50 footcandles at a distance of 4 feet from a source, the intensity of the source must be

(A) 50 candles
(B) 200 candles
(C) 800 candles
(D) 1,600 candles
(E) 2,500 candles

$$\begin{array}{r} 4 \\ 896\overline{)3{,}59\square} \\ \underline{3{,}58\triangle} \\ 6 \end{array}$$

19. If the solution of the division problem above is correct, what digit does $\square$ represent?

(A) 6 (B) 4 (C) 2 (D) 1 (E) 0



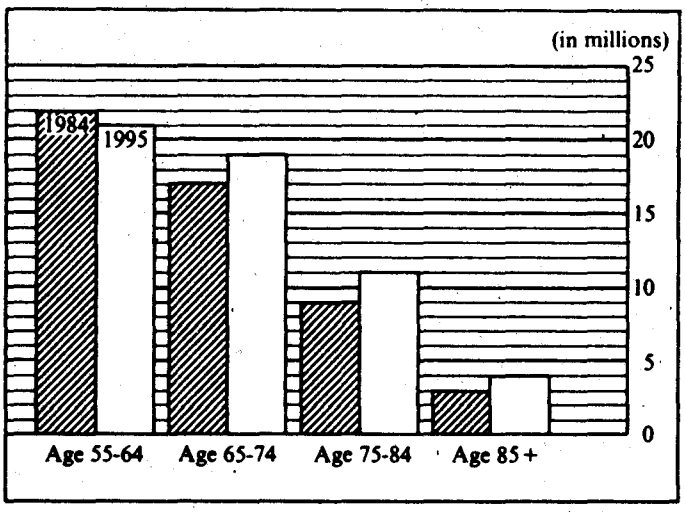
20. In the rectangular coordinate system above, if the area of rectangular region $PQRS$ is 35, what are the coordinates of point P?

(A) $(-2, -2)$
(B) $(-2, 5)$
(C) $(-3, 5)$
(D) $(-4, 5)$
(E) It cannot be determined from the information given.

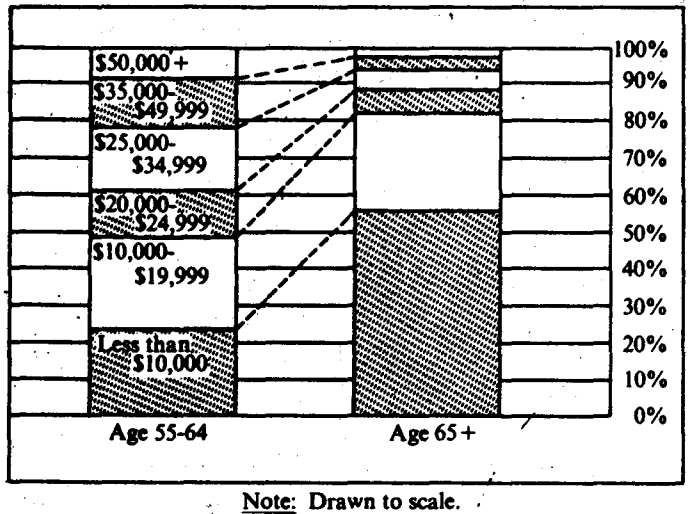
GO ON TO THE NEXT PAGE.

Questions 21-25 refer to the following graphs.

POPULATION OF THE UNITED STATES AGE 55 AND OVER, 1984 AND PROJECTIONS FOR 1995



INCOME DISTRIBUTION FOR POPULATION AGE 55 AND OVER, 1984



Note: Drawn to scale.

GO ON TO THE NEXT PAGE.

21. The age category that is projected to decrease from 1984 to 1995 is projected to have approximately how many million people in 1995?

(A) 17 (B) 18 (C) 21 (D) 23 (E) 24

22. In 1984 the median income for a person in the 55-64 age category was in which of the following intervals?

(A) Less than $10,000
(B) $10,000—$19,999
(C) $20,000—$24,999
(D) $25,000—$34,999
(E) $35,000—$49,999

23. If it is projected that the population age 55 and over will comprise $\frac{1}{5}$ of the total population in 1995, then the total population is projected to be approximately how many million in 1995?

(A) 275 (B) 260 (C) 250
(D) 245 (E) 220

24. In 1984 approximately how many more people age 55-64 had incomes less than $10,000 than had incomes of $50,000 or more?

(A) 2.2 million
(B) 3.3 million
(C) 4.4 million
(D) 5.5 million
(E) 11.0 million

25. For the age category that is projected to have the largest percent increase from 1984 to 1995, approximately what is the projected percent increase in population?

(A) 10% (B) 15% (C) 20%
(D) 25% (E) 35%

GO ON TO THE NEXT PAGE.

26. $\frac{3^3 - 3^2}{3} =$

(A) 0 (B) 1 (C) 3 (D) 6 (E) 9

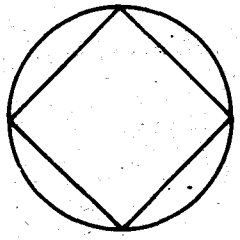
27. A certain rectangle has perimeter 54. If the ratio of the length of the rectangle to the width is 5 to 4, what is the length of the rectangle?

(A) 30 (B) 27 (C) 24 (D) 18 (E) 15

28. The expression $(x + 4)(2x - 3)$ is equivalent to which of the following?

I. $2x(x + 4) - 3(x + 4)$
II. $(x - 4)(2x + 3)$
III. $2x^2 - 12$

(A) I only (B) II only (C) III only
(D) II and III only (E) I, II, and III



29. In the figure above, what is the area of the square inscribed in the circle of radius a ?

(A) $2a$ (B) $\sqrt{2}a^2$ (C) a^2
(D) $2a^2$ (E) $4a^2$

30. A certain form letter is to be sent to prospective customers. If 4 model-X computers working independently can do a combined total of 4 of the letters in 4 minutes, then 100 model-X computers working independently can do a combined total of 100 of the letters in exactly how many minutes?

(A) 4 min
(B) 10 min
(C) 25 min
(D) 40 min
(E) 100 min

FOR GENERAL TEST 15 ONLY

Answer Key and Percentages* of Examinees Answering Each Question Correctly

VERBAL ABILITY					
Section 2			Section 4		
Number	Answer	P+	Number	Answer	P+
1	B	88	1	D	85
2	C	79	2	A	85
3	E	73	3	B	75
4	C	58	4	C	49
5	C	75	5	C	54
6	E	30	6	C	49
7	E	32	7	D	47
8	E	90	8	E	90
9	B	87	9	B	73
10	D	72	10	B	70
11	D	55	11	D	67
12	D	59	12	A	62
13	A	50	13	C	42
14	E	36	14	A	47
15	A	32	15	B	39
16	D	8	16	D	25
17	C	46	17	D	51
18	A	68	18	A	47
19	C	77	19	B	33
20	A	61	20	D	63
21	A	35	21	C	92
22	C	62	22	E	21
23	E	43	23	B	57
24	C	65	24	C	50
25	D	45	25	D	38
26	A	43	26	B	68
27	D	38	27	D	38
28	B	90	28	D	91
29	C	89	29	E	84
30	D	80	30	B	81
31	E	77	31	B	79
32	D	74	32	E	62
33	B	51	33	C	61
34	B	50	34	C	33
35	C	28	35	E	31
36	E	34	36	B	25
37	E	21	37	A	29
38	C	14	38	B	20

QUANTITATIVE ABILITY					
Section 3			Section 6		
Number	Answer	P+	Number	Answer	P+
1	B	89	1	B	85
2	A	93	2	B	87
3	B	86	3	D	82
4	C	92	4	A	84
5	A	88	5	C	82
6	A	80	6	B	77
7	A	79	7	C	72
8	C	63	8	A	73
9	B	59	9	D	69
10	A	64	10	C	61
11	D	54	11	B	50
12	C	69	12	B	65
13	D	63	13	D	47
14	B	40	14	C	45
15	B	28	15	A	27
16	D	83	16	B	94
17	A	83	17	C	95
18	B	77	18	C	82
19	B	79	19	E	80
20	D	69	20	B	73
21	B	93	21	C	95
22	D	73	22	C	72
23	A	47	23	A	58
24	E	33	24	B	32
25	C	36	25	E	19
26	C	67	26	D	73
27	D	63	27	E	50
28	E	44	28	A	59
29	C	33	29	D	42
30	E	28	30	A	33

ANALYTICAL ABILITY					
Section 1			Section 5		
Number	Answer	P+	Number	Answer	P+
1	A	89	1	B	86
2	D	76	2	C	74
3	B	65	3	A	74
4	C	68	4	E	81
5	D	64	5	C	73
6	C	71	6	E	81
7	D	82	7	C	72
8	E	67	8	D	68
9	E	88	9	A	59
10	B	93	10	E	54
11	E	54	11	D	84
12	B	81	12	D	40
13	A	44	13	A	43
14	B	63	14	B	53
15	A	63	15	C	60
16	E	64	16	C	70
17	A	53	17	B	87
18	B	52	18	E	52
19	B	26	19	A	38
20	E	30	20	C	48
21	D	21	21	D	25
22	D	28	22	B	22
23	A	48	23	D	46
24	C	23	24	D	39
25	B	22	25	A	25

*Estimated P+ for the group of examinees who took the GRE General Test in a recent three-year period.